International Journal of Impotence Research (2003) 15, 210–220
 0955-9930/03 $25.00
www.nature.com/ijir

# Structured interview on erectile dysfunction (SIEDY©): a new, multidimensional instrument for quantification of pathogenetic issues on erectile dysfunction

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**The aim of the present study is the definition of a brief structured interview (SI) providing scores useful for identification and quantification of pathogenetic factors of erectile dysfunction (ED). A SI was developed and applied to a consecutive series of 320 ED patients. A 13-item SI, with three-factor analysis-derived scales, was identified and applied for validation to an independent consecutive series of 194 ED patients. $PGE_1$ (10 μg) intracavernosal injection, penile duplex ultrasound (PDU), blood hormones, PSA, glycemia, and lipids were used for the assessment of an organic component (OC), and Middlesex Hospital Questionnaire (MHQ) modified for psychological disturbances. Scale 1, dealing with OC, showed a positive correlation with age, BMI, blood pressure, glycemia, and inverse correlation, with testosterone, $PGE_1$ and several parameters derived from PDU. Scale 2, related to partner's relationship, was not correlated with organic parameters. Scale 3, which measures psychopathological traits was correlated with MHQ scales. Scale 1 (>3) had a sensitivity of 67.9% and a specificity of 67.6% for OC. SIEDY© provides information on ED pathogenesis and might assist physicians in diagnostic and therapeutic choices.**
*International Journal of Impotence Research* (2003) **15,** 210–220. doi:10.1038/sj.ijir.3901006

**Keywords:** erectile dysfunction; anamnesis; penile duplex ultrasound; structured interview

## Introduction

Erectile dysfunction (ED) is a relatively common multidimensional disorder that might significantly impair the quality of life. Several biological, psychological and lifestyle factors are often simultaneously present in each patient and they mutually concur in determining the disorder.[1] The correct assessment of the pathogenesis of ED is therefore rather difficult. Complex diagnostic procedures, such as intracavernosal injection of $PGE_1$ with or without penile duplex ultrasound (PDU) evaluation of penile vessels, cavernosometry and cavernosography, and nocturnal penile tumescence, can be very useful in the definition of pathogenetic factors underlying ED.[2] However, these procedures are rather expensive and they are not easily available in all practices. Conversely, anamnesis and physical examination can provide information accurate enough for a correct pathogenetic definition in most cases.[3]

The accuracy of anamnestic information depends upon the specific experience and interviewing skills of the individual physician. In current clinical practice, structured interviews (SIs) can represent a standardized and therefore more reliable instrument, when compared to routine anamnesis.

Specific self-reported questionnaires have been developed for the assessment of severity of ED. Self-reported measures of severity of ED[4,5] are widely recognized as valid instruments and are routinely used for the evaluation of the efficacy of treatments. However, attempts to use self-reported questionnaires as a means of differentiating psychogenic from organic impotence have produced mixed results. In 1975, Beutler *et al*[6,7] reported that the Minnesota Multiphasic Personality Inventory was capable of classifying correctly, as psychogenic or organic ED, the majority (90%) of a limited series of impotent men (32 patients). Later on, Derogatis *et al*[8] reported, in another small series, that gender role, as assessed by another self-reported questionnaire, the Derogatis Sexual Function Inventory, was able to

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Received 16 October 2002; revised 5 February 2003; accepted 5 February 2003

identify correctly a similar proportion (89%) of organic and psychogenic ED. However, the diagnostic value of both questionnaires was not confirmed in further studies.[9–12] More recently, the Florida Sexual History Questionnaire, a simple 20-item questionnaire, has been reported to discriminate between impotent diabetic patients and nonimpotent healthy controls.[13] Eight items of this questionnaire have been claimed to discriminate between organic and psychogenic ED;[14] in the validation study, psychogenic ED was defined as the absence of signs of organic disturbances, without any clear reference to the psychopathological features of patients. Similarly, patients with organic disorders were classified as 'organic', irrespective of their psychological status.[14] Furthermore, the discriminant function used for differential diagnosis was complex, and difficult to calculate.[14]

Although SI are widely considered more reliable than self-reported questionnaire, validated structured interview evaluating pathogenetic issues of ED are not currently available and only pilot studies in small patient samples have been reported (see in Ackerman and Carey[15] for review). Hence, the aim of the present study is the definition of a brief SI for patient with ED, providing scores useful for the assessment of the pathogenesis of this relatively common disorder.

## Patients and methods

Relevant areas for the pathogenetic definition of sexual dysfunction were identified by a team of andrologists, endocrinologists, and psychologists, of the clinical staff of the Andrology and Endocrinology Units of the University of Florence. These areas include sociodemographic information, behaviors, medical history, psychological/psychiatric history, medication, and sexual symptomatology. Each of these areas was investigated through a small number of specific questions. The resulting interview was composed of 57 items. For each item, the text of the question was exactly defined; for some items, facultative questions were added for better definition of the case. The patient's answer was codified on a 0–3 Likert scale by the interviewer, following detailed instructions; for some of the items, the answers had a yes/no format (with 0/3 scores).

This first, longer version of the interview was applied to a consecutive series of 320 patients (sample A) visited for the first time at the Outpatient Clinic of Andrology, within the Endocrine Department of Villa Monna Tessa Hospital of the University of Florence. Patients were interviewed prior to the beginning of any treatment, and before any specific diagnostic procedures. Patients with mental retardation, or not fluent in Italian, were excluded. All patients underwent a complete physical examination, with measurement of blood pressure (mean of three measurements 5 min apart, in sitting position, with a standard sphygmomanometer), height, weight, and testis volume (Prader orchidometer). Erectile function was investigated using a brief SI, which is reported in Appendix A. Blood samples were drawn in the morning, after overnight fast, for determination of blood glucose (by glucose oxidase method, Aeroset Abbott, Rome, Italy) total and HDL cholesterol, and triglyceride (by automated enzymatic colorimetric method; Aeroset Abbott, Rome, Italy). Total testosterone, prolactin, FSH, LH, TSH, PSA (by electrochemiluminescent method, Modular Roche, Milan, Italy). Characteristics of sample A are summarized in Table 1.

The interview was applied by two of the authors (MM and LP). Factor analysis, with the principal component method, was applied to the scores of individual items. Three main factors were identified, which accounted for 37.8% of variance. Items that showed a weak unrotated correlation ($r<0.30$) with all the three factors were excluded. Factor analysis, with principal component analysis, was again applied on this second version of the interview, the Structured Interview on Erectile DYsfunction (SIEDY©), and varimax rotation was used for assignment of individual items to each scale. Scales' scores were expressed as median (quartiles), and correlated with demographic and clinical parameters using Spearman's correlations.

The long format of the interview is available upon request to the authors, provided that it is used for research purposes only. The short (13-items) version of SIEDY©, complete with the instructions for the interviewer, is reported in Appendix B.

The short interview (SIEDY©) was applied, for validation, to a second consecutive series of patients (sample B) attending for the first time the Outpatient Clinic of Andrology, within the Metabolic Department of Careggi Hospital of the University of Florence. Inclusion and exclusion criteria were the same as for Sample A. Patients were interviewed by two of the authors (GF and GC) prior to the beginning of treatment, and before any specific diagnostic procedure. Patients underwent the same procedures as described for sample A (Table 1); furthermore, they were asked to complete the Middlesex Hospital Questionnaire (MHQ), modified,[16] a brief self-reported questionnaire for the screening of mental disorders, which provides scores for free-floating anxiety, phobic anxiety, obsessive–compulsive traits and symptoms, hysterical traits and symptoms, somatization, and depressive symptoms. All patients of sample B underwent a provocative test with $PGE_1$ (10 μg); response was assessed after 20 min; responses were recorded on a four-point scale: 1 = no response; 2 = rigidity, insufficient for intercourse (<50%); 3 = rigidity, sufficient for intercourse (>50%); 4 = full erection (>90%) as previously described.[17] In addition,

**Table 1** Description informations of samples A and B

| | *Sample A* | *Sample B* |
|---|---|---|
| Age (y) | 48.3±13.5 | 56.9±11.3 |
| ED duration | | |
| <6 months | 25.5% | 15.6% |
| >6 months | 74.5% | 84.4% |
| Frequency of intercourses (last 3 months) | | |
| No intercourse | 15.2% | 17.8% |
| One to two intercourses/month | 28.4% | 32.8% |
| Three to seven intercourses/month | 45.1% | 37.9% |
| >8 intercourses/month | 11.3% | 11.5% |
| Marriage duration (or years living together with a partner) | | |
| <1 y | 16.6% | 6.1% |
| 1–5 y | 13.1% | 10.1% |
| 6–10 y | 10.6% | 5.6% |
| >10 y | 59.7% | 78.2% |
| Marital status | | |
| Married or living with partner | 68.7% | 81% |
| Stable relation, not living together | 22.3% | 10.3% |
| No partner | 9% | 8.7% |
| Diseases | | |
| Endocrine diseases | 6.7% | 2.5% |
| Diabetes mellitus | 6.8% | 26.7% |
| Ischemic heart disease | 6.1% | 13.3% |
| Hypertension | 15.8% | 30.3% |
| Multiple sclerosis | 1.9% | 1.5% |
| Psychiatric disorders | 4.8% | 1% |
| Drugs interfering with erectile function | 17.1% | 20% |
| Peronie's disease | 4.2% | 7.2% |
| Pelvic surgery | 1% | 5.6% |
| Cryptorchidism | 6.1% | 2.6% |
| Clinical and laboratories parameters | | |
| BMI | 25.5±3.4 | 27.1±4 |
| Right testicular volume | 20.41±4.43 | 19.7±4.7 |
| Left testicular volume | 20±4.5 | 19.4±4.8 |
| FSH (mUI/l) | 5.9±7 | 7.8±10.8 |
| LH (mUI/l) | 4.2±3.1 | 5.2±5.9 |
| PRL (mUI/l) | 160 [115–238] | 149 [110–212] |
| Testosterone (nmol/l) | 16.9±5.9 | 16.3±7.6 |
| PSA (ng/ml) | 1.4±1.3 | 1.1±1.26 |
| TSH (mU/l) | 1.7±1.1 | 1.8±2.1 |
| Glycemia (g/l) | 0.96±0.2 | 1.2±0.51 |
| Cholesterol (mg/dl) | 218±52.4 | 217±41.2 |
| Triglyceride (mg/dl) | 121.5 [81.7–179.7] | 143 [106–201] |

Data are expressed as mean±s.d. when normally distributed, median (quartiles) when non-normally distributed, percentage when categorical.

because a normal $PGE_1$ responsiveness might be also present in patients with arteriogenic ED,[18,19] PDU examination was also performed before and after $PGE_1$ intracavernous injection (10 μg). A $PGE_1$-induced cavernosal peak systolic velocity (PSV) ≥30 cm/s was considered normal.[20,21] In selected patients with a possible neurogenic component of ED, neurophysiologic tests were performed (assessment of the sacral reflex, somatosensory-evoked potential of the pudendal nerve, skin reflex, anal or urethral sphincter electromyogram).[22]

An organic component (OC) of ED was considered present when at least one of the following conditions was satisfied:

- abnormal hormonal profile (peripheral or central hypogonadism, hyperprolactinemia, hypo- or hyperthyroidism);
- abnormal results of PDU parameters (dynamic PSV <30 cm/s);
- abnormal results of neurophysiologic test;

- use of medications interfering with erectile function;[23]
- presence of Peronie's disease.

Scores of the previously identified scales of the interview were correlated with demographic and clinical parameters using Spearman's method. Mann–Whitney *U*-tests were used for comparison of scale scores (which were not normally distributed) between groups of patients differing for clinical or demographic characteristics. Multivariate analysis was performed using stepwise multiple linear regression. A receiver operating characteristic (ROC) curve analysis was performed on scale 1 scores for the assessment of the OC of ED.

All statistical analysis was performed on SPSS for Windows 10.0.

## Results

The shorter format of the interview (SIEDY©) was composed of 13 items. Factor analysis of those items in sample A confirmed the previously observed factor structure of the interview. Three main factors (with eigenvalues of 2.05, 1.82, and 1.61) accounted for 39.2% of total variance. Correlation of each item's score with factors after varimax rotation (Table 2) allowed the identification of three domains: scale 1 included items describing the OC of ED; scale 2 was composed of items which assess features of the patients' partners; finally, scale 3 includes items related to the psychopathological status of patients. Factor analysis performed in sample B also identified three scales (eigenvalues of 2.64, 2.13, and 2.02) accounting for 48.6% of variance; analysis of correlation of items' scores with factors after rotation confirmed the results observed in sample A (data not shown).

Correlations of scales 1, 2, and 3 with demographic and clinical parameters in the two samples are summarized in Table 3. In both samples, scale 1 showed significant direct correlations with age of patients and partners, while it was inversely correlated with years of education. Scores of scale 1 were significantly higher in patients taking medication capable of interfering with erectile function, both in sample A (4.0 [2.0–5.5] *vs* 1.0 [0.0–3.0]; $P<0.001$) and in sample B (4.0 [3.0–5.2] *vs* 3.0 [1.0–5.0]; $P<0.01$). Multivariate analysis on combined samples, including age, education, use of medication interfering with sexual function, and partner's age as putative covariates, revealed that only partner's age ($r=0.43$) and use of medication were significantly ($P<0.01$) correlated with scores of scale 1. In sample B, scale 1 was also directly correlated with frequency of partial erection (not firm enough for penetration) or absent erection, and indirectly correlated with frequency of full erection and of inability to maintain erection. In sample A, scale 1 was correlated directly with frequency of partial erection and indirectly with frequency of full erection, while the other two correlations were not statistically significant. Combining both samples, at stepwise multiple regression, after adjustment for age, scale 1 showed a significant ($P<0.0001$) inverse correlation with frequency of full erection ($r=-0.21$), but not with partial erection. Scale 1 showed a significant correlation, in both samples, with several parameters related to medical conditions associated with ED, such as BMI, systolic and diastolic blood pressure, and glycemia. Furthermore, this scale was correlated directly with FSH, and inversely with total testosterone (Table 3). After adjustment for age, in combined samples, only glycemia ($r=0.33$; $P<0.0001$) and testosterone ($r=-0.16$; $P<0.05$) retained significant correlation with scale 1, while all the other parameters cited above did not. In patients of sample B, significant inverse correlations of quantitative response to intracavernosal injection of prostaglandin $E_1$, baseline and $PGE_1$-induced cavernosal PSV, and acceleration, were observed (Table 3). After adjustment for age, correlation of scale 1 with response to $PGE_1$ was confirmed ($r=-0.37$; $P<0.0001$), while other correlations with parameters obtained with PDU examination were not; in this case, multivariate analysis was performed in sample B only, as duplex ultrasound examination was not available for sample A.

In both samples, scale 2 scores showed significant correlations with patient and partner age; this scale was also inversely correlated with years of education (Table 3). Stepwise multiple linear correlation performed on combined samples, after adjustment for age, confirmed the correlation of scale 2 with age of partner ($r=0.31$; $P<0.0001$), but not with years of education.

In both samples, scale 3 showed significant inverse correlations with age (Table 3). In sample B, significant correlations of scale 3 with years of education and age of partner were also observed, but

**Table 2** Principal components analysis with varimax rotation of SIEDY© in sample A

| *Items* | *Factor 1* | *Factor 2* | *Factor 3* |
|---|---|---|---|
| Satisfaction for job/occupation | 0.38 | −0.01 | **0.59** |
| Work-related stress | 0.19 | 0.15 | **0.37** |
| Conflict with partner | −0.25 | 0.12 | **0.58** |
| Partner's disease | −0.07 | **0.67** | 0.11 |
| Partner's desire | −0.01 | **0.70** | −0.01 |
| Partner's orgasm | 0.02 | **0.59** | 0.14 |
| Menopausal symptoms of partner | 0.16 | **0.70** | −0.04 |
| Familial conflict | −0.23 | −0.07 | **0.60** |
| Extrapair intercourses | 0.02 | 0.04 | **0.50** |
| Spontaneous erections | **0.44** | 0.14 | −0.2 |
| Patient's desire | 0.03 | 0.03 | **0.53** |
| Reduced volume of ejaculate | **0.60** | 0.03 | 0.06 |
| Neurological disease | **0.70** | −0.15 | 0.07 |
| Cardiovascular disease | **0.67** | 0.06 | 0.04 |

Items with the highest loadings within each factor are boldfaced.

**Table 3** Spearman's correlation (*r*) of scales (samples A and B) with sociodemographic, clinical, laboratory, and instrumental parameters

| | *Spearman's coefficient* | | | | | |
|---|---|---|---|---|---|---|
| | *Scale 1* | | *Scale 2* | | *Scale 3* | |
| | *A* | *B* | *A* | *B* | *A* | *B* |
| Age (y) | 0.41** | 0.41** | 0.26** | 0.31** | −0.15* | −0.23** |
| Educational status | −0.22** | −0.26** | −0.12* | −0.30** | NS | 0.26* |
| Partner's age (y) | 0.39** | 0.38** | 0.29** | 0.35** | NS | −0.17* |
| Percentage of full er | −0.24** | −0.24** | NS | NS | NS | NS |
| Percentage of partial er | 0.17** | 0.15* | NS | NS | NS | NS |
| Percentage of absence er | NS | 0.26** | NS | NS | NS | NS |
| Percentage of inability to maintain er | NS | −0.26** | NS | NS | NS | NS |
| BMI ($kg/m^2$) | 0.19** | 0.16* | NS | NS | NS | NS |
| sBP | 0.28** | 0.22** | NS | NS | NS | NS |
| dBP | 0.25** | 0.18** | NS | NS | NS | NS |
| FPG | 0.33** | 0.39** | NS | NS | NS | NS |
| Cholesterol | NS | NS | NS | NS | NS | NS |
| Triglyceride | NS | NS | NS | NS | NS | NS |
| FSH | 0.12* | 0.19** | NS | NS | NS | NS |
| LH | NS | NS | NS | NS | NS | NS |
| Testosterone | −0.22** | −0.21** | NS | NS | NS | NS |
| PRL | NS | NS | NS | NS | NS | NS |
| TSH | NS | NS | NS | NS | NS | NS |
| $PGE_1$ test | NA | −0.39** | NA | NS | NA | 0.21** |
| R-basal PSV | NA | −0.38** | NA | NS | NA | NS |
| R-acceleration | NA | −0.39** | NA | NS | NA | NS |
| R-dynamic PSV | NA | −0.32** | NA | NS | NA | NS |
| L-basal PSV | NA | −0.25** | NA | NS | NA | NS |
| L-acceleration | NA | −0.30** | NA | NS | NA | NS |
| L-dynamic PSV | NA | −0.25** | NA | NS | NA | NS |
| MHQ-anxiety | NA | NS | NA | NS | NA | 0.35** |
| MHQ-somatization | NA | NS | NA | NS | NA | 0.22** |
| MHQ-depression | NA | NS | NA | NS | NA | 0.24** |
| MHQ-hysterical symptoms | NA | NS | NA | NS | NA | 0.20** |

*$P<0.05$. **$P<0.01$.
er: erection; BMI: body mass index; sBP: systolic blood pressure; dPB: diastolic blood pressure; FPG: fasting plasma glucose; R: right; L: left; PSV: peak systolic velocity; MHQ: Middlesex Hospital Questionnaire; NS: not significant; NA: not applicable.

this was not confirmed in sample A; combining both samples, at multivariate analysis, age of partner was not significantly correlated with scale 3 scores after adjustment for age. In sample B, scale 3 also showed significant correlations with MHQ scales measuring free-floating anxiety, hysterical traits and symptoms, depression, and somatization (Table 3). At multiple linear regression, after adjustment for age, only free-floating anxiety ($r=0.35$; $P<0.0001$), but not other MHQ scores, was significantly correlated with scale 3. A weak positive correlation between scale 3 and response to $PGE_1$ (Table 3) was not confirmed at multivariate analysis after adjustment for age.

Scale 1 scores were significantly higher in patients with OC of ED ($n=99$) when compared to the rest of sample B (4.0 [3.0–6.0] *vs* 3.0 [1.0–4.0]; $P<0.001$). Distribution of scale 1 scores in patients with and without OC of ED in sample B is reported in Figure 1. ROC analysis was applied to scale 1 to investigate its effectiveness in the assessment of the OC of ED (Figure 2). Scale 1 scores significantly predicted the presence of OC, with an area under the ROC curve of 0.70 (95% confidence interval: 0.63–0.78). Using a threshold of 3.5, scale 1 had a sensitivity of 67.9% and a specificity of 67.6%.

## Discussion

The assessment of pathogenesis of ED is relevant for the definition of a correct therapeutic approach.[24] Standard methods for diagnosis of the etiopathogenesis of ED include physical examination, and a number of laboratory tests and instrumental methods, which are usually applied to selected subpopulations of patients.[2] Anamnesis plays a pivotal role in the pathogenetic definition of ED, being often used as a guide for the choice of further diagnostic procedures in individual cases.[3] It has been reported that a complete anamnesis could be sufficient for a correct pathogenetic diagnosis in the majority of patients.[3,10]

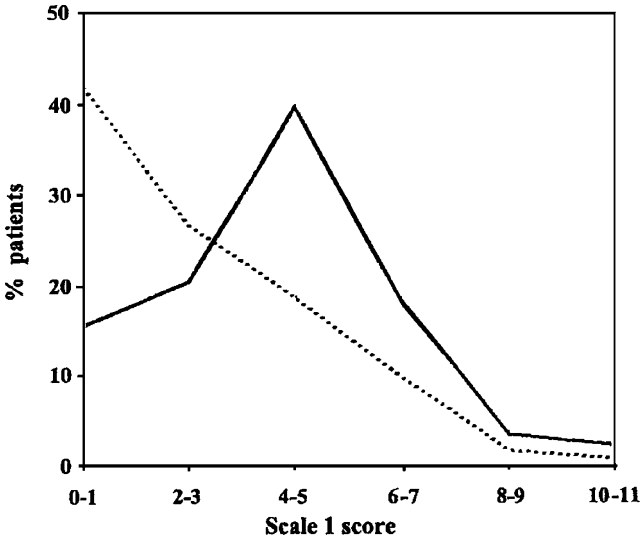


**Figure 1** Distribution of scale 1 scores in patients with (solid line) and without (dotted line) OC of ED in sample B.

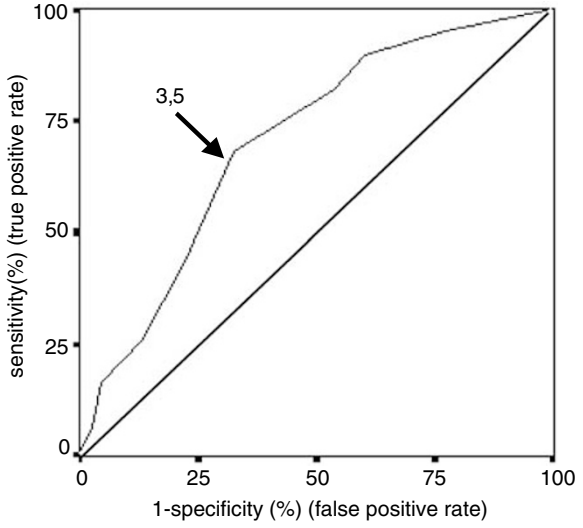


**Figure 2** ROC curve for scale 1 scores in the identification of patients with OC of ED in sample B.

Anamnestic data are usually collected, in routine clinical practice, through non-SIs. This approach, although effective in most cases, does not allow a proper standardization of diagnostic procedures, and it is greatly affected by experience and interviewing skills of health professionals. A few attempts toward a greater standardization of anamnesis have been made in the past. Self-reported questionnaires have yield mixed results.[6,8,14]

Factor analysis of the present interview, which was specifically designed for the pathogenetic definition of ED, identified three domains, related to organic disturbances, relationship with partner, and psychological factors affecting sexual function. This result is concordant with the multifaceted pathogenesis of erectile dysfunction. It is worth noting that features of relationship with partner, which could play a relevant role in the pathogenesis of some cases of ED,[25] represent a domain distinct from the patient's own psychological factors. To our knowledge, this is the only instrument to date that provides a quantitation of disturbances in relationship with partner. In fact, previous instruments[6,8,14] did not include questions specifically aimed at the investigation of this domain. The assessment of the area investigated by scale 2 could be relevant as a guidance for subsequent psychological counseling in selected patients. Scale 2 is obviously not applicable to patients without a partner, although this particular subset represents a minority of our samples. Absence of scores in scale 2 does not affect the quantitation of the other two scales.

Scale 3, which investigates psychological components of ED, includes items assessing attitudes toward working and family environment. Disturbances of relationships at work and at home are often associated with increased levels of anxiety;[26] in fact, scores of scale 3 appear to be correlated with anxiety, rather than with other psychopathological areas.

The assessment of the three domains identified through factor analysis can be performed using SIEDY©, a brief, 13-item interview, which is easily applicable in routine clinical practice. Scale 1 of the interview, although composed of four items only, is capable of identifying patients with an OC of ED with a sensitivity and specificity comparable to that of longer self-reported questionnaires.[14] Unlike previously described instruments, the SIEDY© also provides a dimensional assessment of both relational and psychological factors. It should be noticed that organic, psychological, and relational factors can coexist in the same patients; therefore, rather than providing a distinction between 'organic' and 'psychogenic' ED, this interview provides a quantitative score for each of the three domains.

SIs are generally considered more reliable than self-reported questionnaires for several reasons. First of all, they reduce the risk of misunderstanding; furthermore, instead of forcing a choice among a limited number of fixed answers, they allow the patient to provide a complete and accurate answer, which is then rated by the interviewer. These advantages could explain the effectiveness of scale 1 of the interview in the screening of cases with OCs, which is similar to that of previously described self-reported questionnaires despite a much lower number of items. A further advantage is represented by the fact that, unlike self-reported questionnaires, a face-to-face interview facilitates a good doctor–patient relationship. It is worth noting that the interview is designed in such a way as to reduce embarrassment for the patient, starting with stan-

dard questions on lifestyle and medical history, and progressively approaching more 'sensitive' issues like sexual function and erectile performance.

The analysis and validation of the interview was performed in two distinct populations. The characteristics of the two samples were not identical; this was because of a difference in recruitment bias. In fact, sample A was enrolled in a clinic within the Endocrine Unit, while sample B was enrolled in a clinic adjacent to a Diabetes Care Unit. For this reason, patients with endocrine dysfunction were more likely to be enrolled in sample A, while a greater proportion of diabetic patients was present on sample B. Despite these differences, the psychometric features of SIEDY© were remarkably similar in the two samples, confirming the validity of the instrument. Furthermore, the interview was applied by different investigators in the two samples; this did not affect the correlations of SIEDY© scores with several demographic and clinical parameters.

The correlations of each scale's scores with clinical, demographic, and psychometric variables were those expected on the basis of the domains explored. In fact, higher scores of scale 1 were observed in older patients, and in those with higher blood pressure, BMI, and glycemia, and lower testosterone, that were more likely to be affected by organic disturbances interfering with erectile function. Scores of scale 1 also showed significant correlations with parameters of penile blood flow and response to intracavernosal injection of $PGE_1$, which were consistent with the presence of an OC of ED. On the other hand, scale 2, exploring disturbances in relationship with partner, did not correlate with any parameter other than partner's age, as expected. Finally, scale 3 did not correlate with parameters exploring OCs of ED; however, scale 3 scores were higher in patients with higher levels of anxiety, and, to a lesser extent, somatization, depression, and hysteria.

The SIEDY© is a psychometric instrument designed for the pathogenetic assessment of ED, and it does not provide a measurement of severity of dysfunction. For this reason, the SIEDY© should be used in combination with other instruments for the assessment of severity, such as the International Index of Erectile Function (IIEF, 5), or Brief Male Sexual Function Inventory (BMSFI, 4). In the present study, quantitation of severity of erectile disturbances was performed using five structured questions that were added at the end of the interview.

In conclusion, the SIEDY© represents a new, multidimensional, brief, versatile, easy to perform instrument for the clinical evaluation of patients affected by ED. In addition, the SIEDY© allows quantification of three domains' scores (organic, marital, and psychopathological) that are often simultaneously present in each patient and that are mutually concurring in determining the ED. Multidomain SIEDY© scores might assist clinicians in suggesting further diagnostic procedures and in establishing the correct therapeutic approach.

## Acknowledgements

We thank Angela Magini, Antonio Cilotti, Csilla Krausz and Michela Cameron Smith of the Andrology Unit of the University of Florence; Luca Maria Carusi of the Radiology Unit of the University of Florence; Leonardo Fei of the Psychiatric Unit of the University of Florence, Andrea Fabbri and Antonio Aversa of the Endocrinology Unit, 'Tor Vergata', University of Rome, and Concetto Vasta of Eli Lilly & Co, Sesto Fiorentino, Italy, for their fruitful collaboration during the course of the study. This study was partially supported by a grant from Ministero Istruzione Università e Ricerca (MIUR), Rome, Italy. Note: a patent is pending on the use of SIEDY©.

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## Appendix A

*SI for the assessment of severity of ED.* The main question is boldfaced. Facultative questions are indicated after the main one. In italic is reported the correct way to score answers by the interviewer.

**(1) Describe what happens during sexual intercourse: do you have an erection?**

Is it a complete erection? Is it sufficient for penetration? How often?

Among what we said, what does it happen more frequently, particularly during the last three months?

*The patient has to describe the erectile problem answering the previous questions. The interviewer should reformulate the patient's answers, in order to confirm that there was no misunderstanding. The description of the problem refers to the last three months. Sometimes = <25% of cases, quite often = 25-50%, often = >50%.*

a) Full erection
0 sometimes
1 quite often
2 often
3 always

b) Partial erection but hard enough for penetration

0 sometimes
1 quite often
2 often
3 always

c) Partial erection but not hard enough for penetration

0 sometimes
1 quite often
2 often
3 always

d) Absent erection
0 sometimes
1 quite often
2 often
3 always

**(2) Does it occur to have a normal erection which you are not able to maintain? How often?**

*Sometimes = at least 25% of times; quite often = between 25–50% of times; often more than 50% of times. We relate to the last three months.*

0 never
1 sometimes
2 quite often
3 often

**(3) Since when do you have erectile problems?**

0 <1 month
1 <6 months
2 <2 years
3 >2 years

**(4) Since when did it get worse?**

0 <1 month
1 <6 months
2 <2 years
3 >2 years

**(5) Did the problem start suddenly or gradually?**

0 suddenly
1 gradually

## Appendix B

*Instructions to perform SIEDY©.* SIEDY© is a structured interview for the definition of the pathogenesis of ED.

The interview is composed of 13 key items, plus two accessory items (number 1 and 5), which do not contribute to the scoring system, but are useful to introduce the key items.

The interviewer should ask the questions written in bold, using the exact words proposed. The further questions written in normal characters can be used to clarify the patient's answers if needed.The patient should be permitted to answer freely, using his own words.

The patient's answers are codified on a 0–3 scale by the interviewer, following the detailed instructions reported after each item. The order in which the questions are made should be observed, as alterations in this succession could theoretically modify the patient's answers. The items, form three scales. Scale 1, which is composed of items 4, 13 and 15, quantifies the organic component of ED; scale 2, which is composed of items 7, 8, 9 and 10, identifies and quantifies the relational component of ED; scale 3, composed of items 2, 3, 6, 11, 12 and 14, quantifies the psychogenic component of ED.

**SIEDY©**

**(1) Do you have a job?**
What is your job?

0 Retired
1 Student
2 Unemployed
3 Employed

**(2) Are you satisfied with your job/occupation?**
*Rank 0 if the patient has a gratifying job/occupation; 1 if the patient is fairly satisfied; 2 if the patient would have preferred to have a different job/occupation; 3 Completely unsatisfied.*
*For those who do not have a job (i.e. retired patients), consider the main occupations (housekeeping, gardening, hobbies, etc.).*

0 Very satisfied
1 Fairly satisfied
2 Not very satisfied
3 Unsatisfied

**(3) Do you ever think of your job out of the working hours?**
*We refer to the last three months. Sometimes: the patient has got occasional thoughts about his job which do not interfere with his normal life; quite often: frequent thoughts that interfere with normal life; often: very frequent thoughts rendering the patient incapable to concentrate on his normal life.*
*For those who do not have a job, score is 0.*

0 never
1 sometimes
2 quite often
3 often

**(4) Have you ever undergone surgery? Have you ever been admitted to a hospital without undergoing surgery? Have you had any other relevant disease without being admitted to a hospital?**
*Mark only diseases specified below, if present. The score will be 0 if none of the conditions specified is present, and 3 if at least one of those conditions is present.*
**Pelvic radiotherapy is considered in the aetiology of erectile dysfunction if ED arises after radiotherapy*
**Cardiovascular disease**

Coronary artery disease ☐
Stroke ☐
Diabetes mellitus ☐
Hypertension ☐
Hyperlipidaemia ☐
Arteriopathy of lower limbs ☐
Pelvic radiotherapy* ☐

0 No
3 Yes

**b. Neurological diseases**
*Abdominal surgery should be considered only in the case that erectile dysfunction arises after the surgical procedure. The score will be 0 if none of the conditions specified is present, and 3 if at least one of those conditions is present.*

Lesion/disease/surgery of pelvic plexus ☐
Lesion/disease/surgery of spinal cord ☐
Lesion/disease/surgery of the central nervous system ☐

0 No
3 Yes

**(5) Do you have a stable relationship with a partner?**
Do you live together?
*Stable relationship means a relation lasting for at least two months, which includes sexual intercourse.*

0 Stable relationship, living together
1 Stable relationship, not living together
2 No stable relationship

**(6) Do you have a difficult relationship with your partner?**
Do you quarrel often? Do you avoid each other?
*A relationship in which there is little conflict and a good dialogue is ranked as normal; occasional quarrels (1) when there is a good dialogue and quarrels occur seldom, without disturbing family relationships; frequent quarrels (2) if the partners try to establish some form of dialogue, but the quarrels disturb family relationship; always (3) means a total*

*absence of dialogue including total avoidance of each other.*

0 No, I have normal relationships
1 No, occasional quarrels
2 Yes, frequent quarrels
3 Always

**(7) Does your partner have any major illness?**
Which diseases? Do these diseases affect the quality of your partner's life?
Do these diseases make your sexual intercourse more difficult?

*Saying important diseases, we mean those that affect in a considerable way the quality of the patient's life. Some of these diseases can affect sexual activity in a considerable manner; the obstacle to sexual activity has to be considered as an objective obstacle and not as a subjective one. For example: the patient may have subjective difficulties in making love with a woman affected by breast cancer and who underwent mastectomy, even if she is healthy at the moment; while the objective obstacle can be represented by the partner's advanced disease stage or by the side effects of treatment.*

0 No
1 Yes, but not compromising sexual activity
2 Yes, compromising sexual activity
3 Yes, so that sexual intercourse is impossible

**(8) Does your partner have more or less desire to make love than in the past?**
*Rank 0 when the partner's desire is unmodified or increased; 1 if desire is moderately reduced, but the frequency of sexual intercourse is not reduced in a relevant manner; 2 if desire is reduced in such a way as to reduce considerably the frequency of sexual intercourse; 3 if the partner has never showed a real desire to make love. The question investigates only the partner's, and not the patient's, desire. If the frequency of the sexual intercourse is reduced due to the impairment of the patient's (and not the partner's) desire, rank 0. The last three months should be considered.*

0 Unmodified or increased desire
1 Desire present but moderately reduced
2 Desire remarkably reduced
3 Desire never present

**(9) Does your partner reach climax?**
How often?
*0 if the partner reaches climax in all intercourses; 1 if climax is reached in more than half of occasions, but not always; 2 if less than half of occasions; 3 if climax has never been reached.*

0 Always
1 Most of the times
2 Sometimes
3 Never

**(10) Is your partner in menopause?**
Does she have any problems due to menopause? Do these problems make sexual activity more difficult? Does your partner have vaginal dryness? Does she have pain during penetration?
*If the partner is a male, or if the partner is a premenopausal woman, the score is 0. If the partner is in menopause, but she has no menopause-related disturbances, or she has disturbances which do not interfere with sexual intercourse (e.g., flushing), the score is 1. The score is 2 when there is sporadic vaginal dryness and/or dyspareunia; the score is 3 when menopause-related symptoms are such as to make sexual intercourse impossible.*

0 Not in menopause
1 In menopause, with no problems, or with problems not interfering with sexual intercourse
2 Problems which moderately interfere with sexual intercourse
3 Problems which remarkably interfere with sexual life.

**(11) Are there any conflicts at home (with children, or other persons living with you?)**

*A relationship in which there is little conflict and a good dialogue is considered normal (0); occasional quarrels (1) when there is a good dialogue and quarrels occur seldom, without disturbing family relationships; frequent quarrels (2); family members try to establish some form of dialogue, but the quarrels disturb family relationship; always (3) means a total absence of dialogue including total avoidance of each other.*

0 No, normal relationships
1 No, occasional quarrels
2 Yes, frequent quarrels
3 Always

**(12) Do you have other sexual relationships (with people other than your usual partner)?**
*''Stable relationship'' is defined as a relationship lasting more than two months, in which the partners meet regularly and have sexual intercourse. ''Occasional'' sexual relationships are those which last less than two months or do not include regularity of relationship.*

0 No
1 Occasionally
2 Another stable relationship
3 Another stable relationship and occasional intercourse with different partners

**(13) Does it ever occur to you to wake up with an erection?**

How often did it happen in the last three months? How often did it happen in the past?

*Rank 0 if the patient reports spontaneous nocturnal/morning erections, with the same frequency previously observed; 1 nocturnal/morning erections are present, but their frequency during the last three months is somewhat lower than that observed previously; 2 if the frequency of nocturnal/morning erections of the last three months is reduced by at least 50%; 3 if nocturnal/morning erections are present.*

0 Yes, regularly
1 Less frequently than in the past
2 Only occasionally
3 Never

**(14) Did you have more or less desire to make love in the last three months?** Was your desire increased or reduced when compared to the past?

*Rank 0 when the patient's desire is unmodified or increased; 1 if desire is moderately reduced, in less than 50% of potential occasions; 2 if desire is reduced in more than 50% of potential occasions; 3 if the patient has had no desire to make love. The question investigates only the patient's, and not the partner's, desire. The last three months should be considered.*

0 Unmodified or increased desire
1 Desire present but moderately reduced
2 Desire remarkably reduced
3 Desire never present

**(15) Did you notice a reduction of the quantity of the volume of ejaculate?**

*Rank 0 when the patient did not notice any modification of the volume of ejaculate; 1 when the patient has the feeling that the volume of the ejaculate could be slightly reduced; 2 when the volume of ejaculate is markedly reduced; 3 when no ejaculation occurs. The last three months should be considered.*

0 No modification
1 Slightly reduced
2 Markedly reduced
3 Ejaculation absent